

Interventional Anesthetic Methods for Pain in Hematology/Oncology Patients



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KEYWORDS

• Anesthetic techniques • Regional • Cancer pain • Intrathecal drug delivery

KEY POINTS

- Approximately 20% of patients with cancer do not receive adequate pain control despite following the WHO pain stepladder; for these patients interventional measures may provide relief.
- There are several single-injection interventions to treat pain that is in an anatomic location clearly supplied by one or more neural pathways, including peripheral or central nerve blocks, plexus injections, and sympathetic nerve neurolysis.
- Continuous infusion therapy through epidural, intrathecal, and perineural infusions can relieve pain with logarithmic medication dose reduction compared with oral route of administration and with significant decreases in side effects.

INTRODUCTION

When cancer pain cannot be adequately treated with traditional medication administration routes, there are numerous interventional procedures that can aid in the management of intractable pain. It has been estimated that cancer pain is well managed for 75% to 90% of patients with cancer by following the World Health Organization (WHO) stepladder for medication escalation.^{1,2} However, for the remaining 10% to 25% of patients who have failed conventional treatment, poor pain control is associated with decreased quality of life for patients and their families.^{3,4} Additionally, some patients experience intolerable systemic side effects from traditional pain management approaches that necessitate consideration of alternative approaches and routes of administration to achieve relief.^{5,6} For these patients, interventional anesthetic procedures are critical in improving daily functioning and quality of life, and reducing medication side effects.

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This article introduces and reviews the wide variety of interventional techniques available in the treatment of simple and complex cancer-related pain. Reviewed are the epidemiology, assessment of pain, specific causes, and progression of pain as they pertain to interventional approaches to cancer-related pain (a discussion of general assessment of the patient in pain is found in Regina M. Fink and Jeannine M. Brants' article, "[Complex Cancer Pain Assessment](#)," in this issue). Also reviewed are the indications for and efficacy of various interventional procedures for targeted pain control in the patient suffering from cancer. The goal is to provide an understanding of when to consider interventional pain management for patients with cancer-related pain and to define the role of the pain physician as part of the oncology team.

EPIDEMIOLOGY OF CANCER PAIN

Estimates of prevalence of cancer pain vary widely because of lack of standardization in definition and reporting variability. The highest rates of pain reported are for head and neck cancer, prostate, uterine, other genitourinary, breast, and pancreatic cancers.^{7,8} The prevalence of pain in patients in active treatment is estimated to be between 24% and 73%.⁹ Those patients with advanced or terminal disease are estimated to have a pain prevalence between 58% and 69%. Surprisingly, patients in remission from their disease report a pain prevalence between 21% and 46%.⁸ Of all patients with cancer pain, more than one-third grade their pain as moderate or severe. Cancer pain is multifactorial in origin and thus there does not exist a one size fits all treatment protocol.^{10,11} Cancer pain negatively affects sleep,¹² social life,¹³ and compromises enjoyment of life.¹⁴

Reviews of the WHO ladder of cancer pain management estimate that this management strategy provides adequate pain relief for 75% to 90% of patients.^{1,15,16} This ladder begins with nonopioid analgesics with gradual escalation to mild opioids with the addition of more potent opioids as the last step. At every level, the option of additional adjuvant medication is present. Although opioid medication is introduced early on the WHO cancer pain relief ladder, globally opioid use and availability vary widely.¹⁷ With opioid availability limited in many parts of the world, consideration of alternate therapies and interventions is crucial. Furthermore, it has been traditionally considered that patients should first be given conventional therapies, reserving interventional cancer pain procedures for patients who do not respond. However, this strategy may lead to delayed referrals and uncontrolled pain. Moreover, patients who are referred late in the course of their disease may not be candidates for interventional procedures because they are too debilitated from the advanced disease and from side effects of treatment. A more inclusive, efficient, and humane approach may be to consider multimodal interventions, including interventional therapies, as part of the same toolbox, all concurrent modalities to be applied throughout the course of the disease process.

GENERAL CONSIDERATIONS FOR INTERVENTIONAL PROCEDURES

The application of regional anesthetic techniques through the use of nerve blocks, neurolysis, or continuous peripheral and neuraxial catheter infusions often provides a high quality of pain control with decreased need for systemic opioids. Patients typically are relieved of one or more components of their pain more profoundly than with opioid therapy alone. The use of interventional procedures in patients suffering from cancer is not without added risks. These patients are by definition immunocompromised and are therefore at a higher baseline risk to acquire infection. Additionally, the hypercoagulable state of many cancer states necessitates anticoagulation therapy

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